CLAIMS

[1] A semiconductor optical device in which a mesa-stripe stacked body including at least a p-type cladding layer, an active layer and an n-type cladding layer is formed on a p-type semiconductor substrate, a current-blocking layer is buried in both sides of said stacked body, and an n-type over-cladding layer and an n-type contact layer are disposed on said current-blocking layer and said stacked body, said semiconductor optical device being characterized in that:

said n-type over-cladding layer is made of a semiconductor crystal having a property for flattening a concavo-convex shape of upper surfaces of said current-blocking layer and said stacked body.

[2] A semiconductor optical device according to claim 1, characterized in that an n-type dopant for said semiconductor crystal is a group VI element.

[3] A semiconductor optical device according to claim 2, characterized in that the n-type dopant is selenium.

[4] A semiconductor optical device according to claim 3, characterized in that doping concentration of the selenium is equal to or higher than 5×10^{18} cm^{-3}.

[5] A semiconductor optical device according to claim 2, characterized in that said semiconductor crystal is an InP crystal.

[6] A semiconductor optical device according to claim 5, characterized in that the n-type dopant is selenium.

[7] A semiconductor optical device according to claim 6, characterized in that doping concentration of the selenium is equal to or higher than 5×10^{18} cm^{-3}.

[8] A semiconductor optical device according to claim 1, characterized in that said current-blocking layer is a high-resistive layer made of a semi-insulating semiconductor crystal.

[9] A semiconductor optical device according to claim 8, characterized in that said high-resistive layer is doped with ruthenium.

[10] A semiconductor optical device according to claim 9, characterized in that said high-resistive layer is made of an InP crystal doped with ruthenium.

[11] A semiconductor optical device according to claim 1, characterized in that said current-blocking layer

is formed of a high-resistive layer made of an n-type semiconductor crystal and a semi-insulating semiconductor crystal.

[12] A semiconductor optical device according to claim 11, characterized in that said high-resistive layer is made of a semi-insulating semiconductor crystal doped with at least one of ruthenium and iron.

[13] A semiconductor optical device according to claim 12, characterized in that said high-resistive layer is made of an InP crystal doped with at least one of ruthenium and iron.

[14] A semiconductor optical device according to claim 1, characterized in that said current-blocking layer is made of an n-type semiconductor crystal and a p-type semiconductor crystal.

[15] A semiconductor optical device according to claim 14, characterized in that said current-blocking layer is made of an n-type InP crystal and a p-type InP crystal.

[16] A method of fabricating a semiconductor optical device, characterized by comprising the step of:

forming a stacked body including at least a p-

type cladding layer, an active layer and an n-type cladding layer on a p-type semiconductor substrate;

processing said stacked body into a mesa stripe-like shape;

burying a current-blocking layer in both sides of said mesa stripe-shaped stacked body;

forming an over-cladding layer to flatten a concavo-convex shape of upper surfaces of said current-blocking layer and said stacked body; and

forming an n-type contact layer on said n-type over-cladding layer.